



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|--------------------------|------------------------|
| 10/539,137 | 04/07/2006 | Kevin Blann | 02814.0081-0000 | 2745 |
| 22852 7590 12/20/2007 FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER LLP 901 NEW YORK AVENUE, NW WASHINGTON, DC 20001-4413 | | | EXAMINER LU, C CAIXIA | |
| | | | ART UNIT 1796 | PAPER NUMBER |
| | | | MAIL DATE 12/20/2007 | DELIVERY MODE PAPER |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/539,137

Applicant(s)

BLANN ET AL.

Examiner

Caixia Lu

Art Unit

1796

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-7, 10-13 and 15-36 is/are rejected.
- 7) ☒ Claim(s) 8, 9 and 14 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 6/16/05
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 5, 7, 10 and 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 5, the limitation of "non-electron donating substituent" lacks antecedence.

In claim 7, (i) the nomenclatures of "1,2-ethane", "1,2-propane", "1,2-catechol", and "1,2-dimethylhydrazine" are improper and they should be replaced with "1,2-ethylene", "1,2-propylene", "1,2-catecholate", and " $-(CH_3)N-N(CH_3)-$ " respectively; and (ii) the term "and" before "a substituted heterohydrocarbyl" and " $-N(R^5)-$ " respectively should be replaced with "or" to be logical.

In claims 10 and 11 respectively, the limitation of A and C independently as "phosphorous oxidized by S or Se or N or O" lacks antecedence since A and C are limited to be phosphorous atom rather than any oxidized form according to claim 1 which claims 10 and 11 are depended upon.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless —

(b) the invention was patented or described in a printed publication in this or a foreign country, or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 5-7, 15, 16, and 18-35 are rejected under 35 U.S.C. 102(b) as being anticipated by Briggs (US 4,668,838).

Briggs teaches a trimerization process in the presence of a chromium complex, a donor ligand such as monocline, diglyme, etc., and cocatalyst of alumoxane (col. 1, lines 46-60, and Examples I and II). Briggs teaching anticipates the instant claims.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-6, 10-13, and 15-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dixon et al. (WO 03/053891 A1, its family, US 2005/0119516, is referred hereinafter for convenience).

Dixon teaches the trimerization of ethylene in the presence of a catalyst composition comprising a chromium complex, a mixed heteroatomic ligand, and an organoaluminum cocatalyst ([0015], [0016], [00214], [0027], [0039], and [0040]). When the linking group, B-(R²)-A(R¹)-(R⁵)-C, of Dixon ligand compound, R¹A(R²BR³R⁴)(R⁵CR⁶R⁷), is bis(phosphinophenyl)amine as shown in the ligand compound disclosed in line 3-4 of [0027], and R³, R⁴, R⁶, and R⁷ are non-electron donating substituent such as alkyl, aryl, substituted aryl such as o-methylphenyl,

halogen, nitro, etc. as listed in [0025], Dixon's ligand compound meet the ligand compound limitation of the instant claims.

Therefore, it would have been obvious to a skilled artisan at the time the invention was made to employ Dixon's teaching to conducted trimerization in the presence of the catalyst wherein the ligand compound is defined as shown above because such is within the generic disclosure of the reference and all of the embodiments of the reference are expected to work and in the absence of any showing of criticality and unexpected results.

7. Claims 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dixon et al. (WO 03/053891 A1, its family, US 2005/0119516, is referred hereinafter for convenience) and Briggs (US 4,668,838) independently in view of Wass (US 6,800,702).

Dixon's teaching of trimerization process is relied upon as shown above. It is noted that Dixon does not expressly disclose conducting an in situ trimerization and copolymerize the trimer with ethylene in the presence of a polymerization catalyst to provide an olefin copolymer. However, Wass teaches a process for preparation of a branched ethylene polymer by in situ preparation of an ethylene trimer in the presence of phosphorous bidentate ligand containing catalyst and copolymerization of the trimer with ethylene in the presence of a polymerization catalyst to provide the branched ethylene polymer (col. 2, lines 32-38).

Since Dixon's trimerization process is functional equivalent to that of Wass, it would have been obvious to a skilled artisan at the time the invention was made to

employ Dixon's trimerization process to Wass' copolymerization process since it is conventional to replace functionally equivalent process and in the absence of any showing criticality and unexpected results.

With the similar rationale, claim 36 is rejected over Briggs in view of Wass.

Allowable Subject Matter

8. Claims 8, 9 and 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The catalyst of instant claims is taught in Wass (US 7,022,788). However, Wass (US 7,022,788) discloses the catalyst to be used for olefin polymerization and does not teach or suggest use the catalyst for oligomerization.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Caixia Lu whose telephone number is (571) 272-1106. The examiner can normally be reached from 9:00 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful and the matter is urgent, the examiner's supervisor, David Wu, can be reached at (571) 272-1114. The fax numbers for the organization where this application or proceeding is assigned is (571) 273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-1700.



Caixia Lu, Ph. D.
Primary Examiner